Amendments to the Drawings:

The attached drawings includes changes to Figs. 1, 4 and 5. These sheets, which include Figs. 1, 2, 4 and 5, replace the original sheets. Figs. 1, 4 and 5 have been amended to correspond with the description in the specification.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-11, 14-22 and 24-26 are pending in the present application. Claims 12, 13 and 23 have been canceled, claims 1, 8, 14, 15, 22 and 24 have been amended and claim 25 and 26 have been added by the present amendment.

In the outstanding Office Action, claims 1, 2, 22 and 23 were rejected under 35 U.S.C. § 102(b) as anticipated by Patel; and claims 3-21 and 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Patel in view of Goldinger et al.

The present invention currently includes independent claims 1, 8, 15, 22 and 24 (independent claim 23 has been canceled). Comments will be presented distinguishing independent claims 1 and 22 followed by independent claims 8, 15 and 24.

Amended independent claim 1 is directed to an antenna system of a radio communication terminal including a directional antenna that transmits and receives an RF signal to and from a base station through a radio link, and an amplifying unit integrated on a same board together with the directional antenna and that amplifies and filters the RF signal. Amended independent claim 22 includes similar features in a varying scope.

In a non-limiting example, Figures 3A and 3B illustrate a directional antenna 122 that transmits and receives an RF signal to and from a base station, and an amplifying unit 204

integrated on a same board together with the directional antenna and that amplifies and filters the RF signal. Thus, because the antenna and the amplifying unit are integrated, a loss can be minimized compared to when the antenna and the amplifying unit are separately designed and coupled, and a loss generated due to the transmission line between the antenna and the radio communication terminal can be compensated (see paragraph [49], for example).

The Office Action applies Patel as teaching an amplifying unit integrated on one board together with a directional antenna and cites amplifiers 130, 134, 138, 154, 158 and Figures 7 and 8, for example. However, it is respectfully noted the illustrations shown in Figures 7 and 8 are merely block diagrams illustrating components used in the integrated directional antenna of Patel. In more detail, Patel is directed to providing components of an antenna to be included within a single casing, for example. For example, Figures 11 and 12 illustrate locations of the components. As shown in Figure 11, for example, the patch reflectors 224 and micro strip radiating elements 220 are disclosed on different boards. Also shown in Figure 11 is a separate RF board 228. That is, as shown in Figure 11, the components of the antenna in Patel are located on different boards and are not integrated on a same board as claimed by the present invention. Goldinger et al. also do not teach or suggest these features.

Turning next to independent claims 8 and 24. Independent claim 8 has been amended to include subject matter similar to that recited in dependent claims 12 and 13. Independent claim 24 includes similar features in a varying scope.

In more detail, amended independent claim 8 is directed to an antenna system including a bias unit that separates an RF signal and a DC power transmitted from a radio communication terminal through a transmission line. Also included is a closed loop control circuit including a coupling unit that branches a transmission output from a final end of the sending end amplifying/filtering unit, and a detection controller that generates a control signal according to a strength of power of the branched transmission output and applies the control signal to the variable gain amplifier.

In a non-limiting example, Figure 4 illustrates a closed loop control circuit including a coupling unit 350a that branches a transmission output from a final end of the sending and amplifying/filtering unit, and a detection controller 350b that generates a control signal according to a strength of the power of the branch transmission output and applies the control signal to the variable gain amplifier 309. Thus, the gain of the antenna system can be maintained to a certain level, so that a speech quality in an area remote from a base station can be maintained by above a certain level (see paragraph [50]), for example.

The Office Action relies on Goldinger et al. as teaching the subject matter recited in original dependent 13 and cites column 11, lines 38-44 and 56-59. However, it is respectfully

noted Goldinger et al. is merely directed to monitoring and analyzing tags attached to different objects in a store, for example. Figure 1 illustrates a circuit diagram of a cell controller 102a, 102b, 102c, for example. As shown in Figure 6, there is no generation of a control signal according to a power of a transmission RF signal outputted from a sending and amplifying/filtering unit nor the claimed coupling unit that branches the transmission output from the final end of the sending end amplifying/filtering unit and its detection controller that generates the control signal. Rather, the frequency control signal 610 from the microprocessor 1001 is applied to the mixer 609 and not to an amplifier. Further, the gain control signal 615 is applied to an attenuator 614 and further the signals from the microprocessor 1001 are not based on a transmission output from a final end of a sending end amplifying/filtering unit.

Turning now to independent claim 15, which is directed to an active antenna system including a bias unit that separates an RF signal, a DC power and a control signal transmitted from the radio communication terminal to a transmission line. Further, the control signal is applied to the sending and receiving and amplifying/filtering units to adjust a corresponding amplifier gain.

In a non-limiting example, Figure 5 illustrates a bias unit 402 that separates an RF signal, a DC power and a control signal transmitted from the radio communication terminals through a transmission line 401. As shown in Figure 5, the control signal from the bias unit

402 is applied to amplifiers 405 and 409 and is used to adjust a corresponding amplifier gain. Similar to the comments presented above with respect to independent claims 8 and 24, it is respectfully noted the control signals in Goldinger are not applied to the amplifiers as claimed by the present invention.

Accordingly, it is respectfully submitted independent claims 1, 8, 15, 22 and 24 and each claims depending therefrom are allowable.

Further, new claims 25 and 26 have been added to set forth the invention in a varying scope, and Applicant submits the new claims are supported by the originally filed specification. For example, it is respectfully submitted new claims 25 and 26 are supported by Figures 3A and 3B and the corresponding description in the specification, for example. It is respectfully submitted the applied art also does not teach or suggest these features.

Further, the specification and drawings have been amended to correct minor informalities. The title was also amended to remove the term "Active." It is believed no new matter has been added.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is

invited to contact the undersigned attorney, **David A. Bilodeau**, at the telephone number listed below. Favorable consideration and prompt allowance are earnestly solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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ABSTRACT OF THE DISCLOSURE

An antenna system of a radio communication terminal includes: a directional antenna for transmitting and receiving an RF signal to and from a base station through a radio link; and an amplifying unit integrated on one board together with the directional antenna and amplifying and filtering the RF signal. A transmistivity of a radio communication terminal is improved, a loss according to a transmission path between an antenna and the radio communication terminal can be compensated, and a speech quality can be maintained by above a certain level even in an area remote from a base station.

FIG. 1
RELATED ART

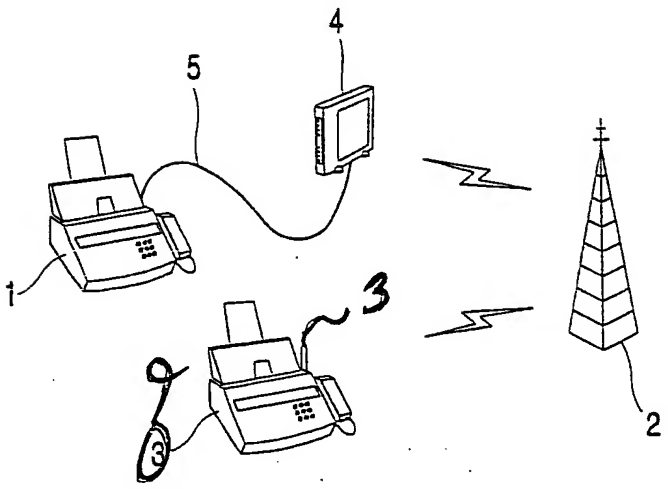


FIG. 2

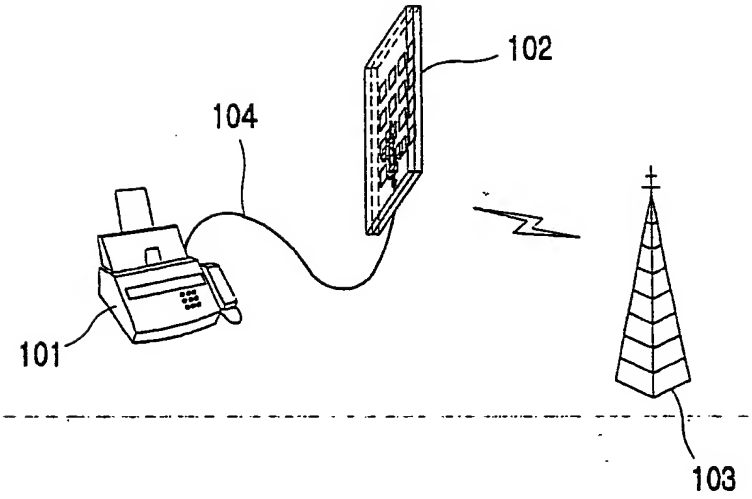


FIG. 4

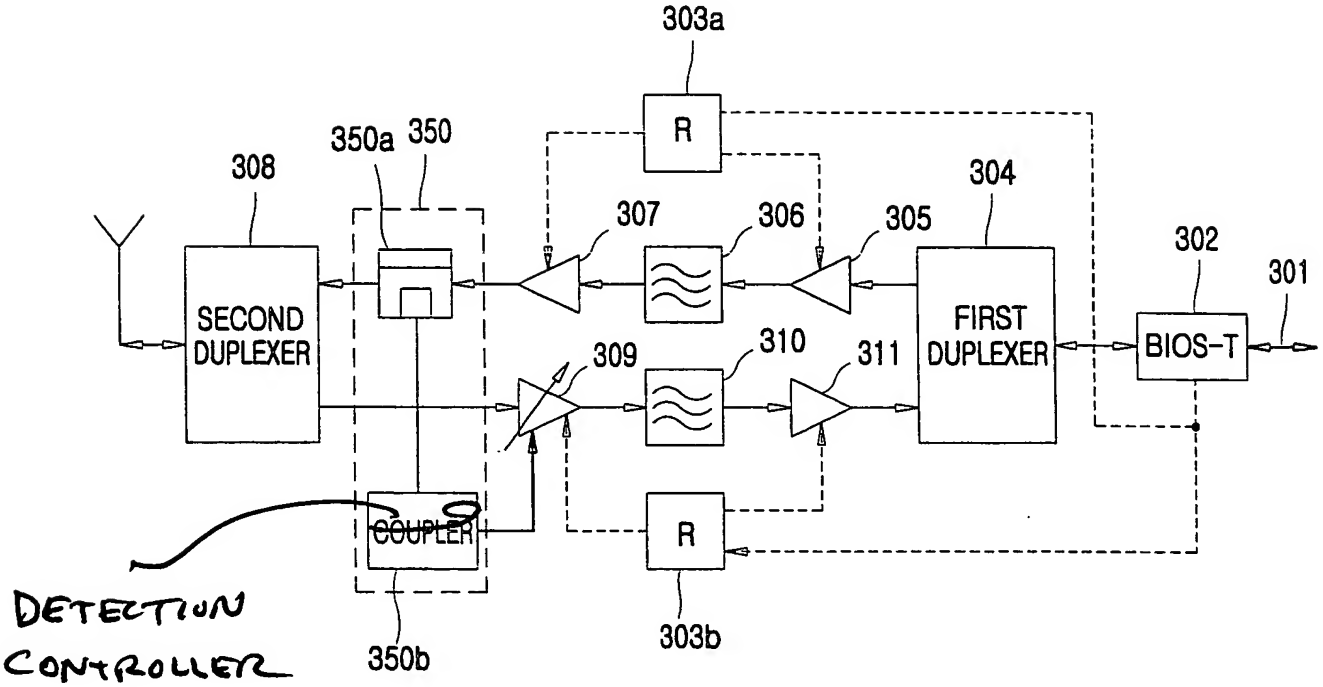
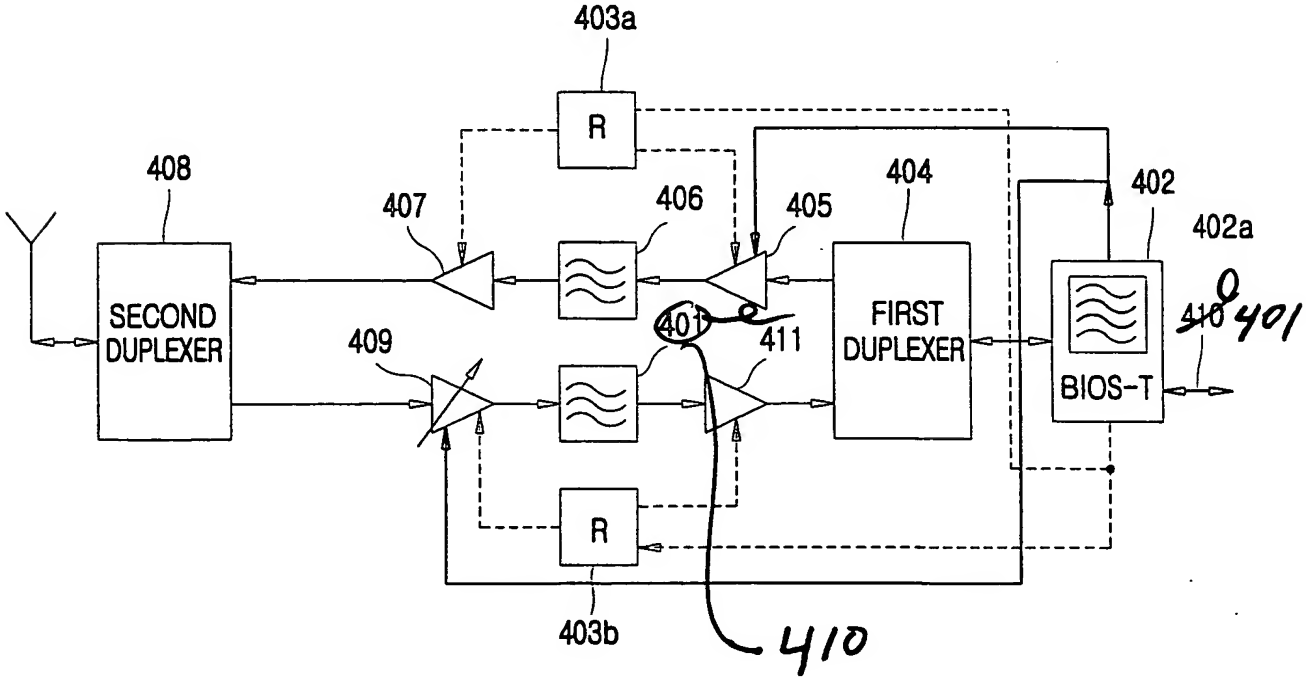

303a
R
350a
350
308
304
307
306
305
302
301
SECOND DUPLEXER
FIRST DUPLEXER
BIOS-T
309
310
311
COUPLER
R
DETECTION CONTROLLER
350b
303b

FIG. 5


403a
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408
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FIRST DUPLEXER
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